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Biocontrol News and Information

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and abstracts from the CAB ABSTRACTS database prepared by the
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C·A·B INTERNATIONAL

CAB International (CABI) is an international, intergovernmental organization registered with the United Nations. It is owned and administered by its member governments; these currently number 29, but membership is open to all governments who wish to participate. Established in 1928, the organization provides information, scientific, and development services for agriculture and allied disciplines throughout the world.

Information Services

The main task of the Information Services, located at the CAB International Centre (CABIC) at Wallingford, is the creation of a bibliographic database of research on agriculture, forestry and allied disciplines, including social sciences and aspects of human medicine. Abstract journals derived from the database, and online access to it, provide a unique source of information for research scientists, development planners, educators and students. Subsidiary but growing tasks are the publication of primary journals and reference works, and training information professionals in developing countries.

The Accessions Unit acquires the relevant scientific and technical literature for abstracting by almost 100 scientists/linguists in the following 11 Bureaux:

Agricultural Economics
Animal Breeding & Genetics
Animal Health
Dairy Science & Technology
Nutrition
Pastures & Field Crops

Crop Protection
Horticulture & Plantation Crops
Plant Breeding & Genetics
Soils
Forestry

Further material is acquired and processed by collaborating or contracted organizations. Other staff coordinate work on specialized directories and databanks, and commission new books and primary journals. The Publications Unit is responsible for printing the journals and books, and the Marketing & Sales Division promotes and sells Information Services products and services worldwide.

Scientific Services

CABI's Scientific Services consist of four Institutes and two support services:

CAB International Institute of Entomology (CIE), Director Dr K.M. Harris, located at 56 Queen's Gate, London, and in the British Museum, Natural History.

CAB International Mycological Institute (CMI), Director Professor D.L. Hawksworth, located at Ferry Lane, Kew, London, adjacent to the Royal Botanic Gardens.

CAB International Institute of Parasitology (CIP), Director Dr R. Muller, located at Winches Farm, St. Albans, the field station of the London School of Hygiene & Tropical Medicine.

These three Institutes provide an authoritative identification service for agricultural pests and other organisms, conduct research, implement projects, and provide training in their fields of expertise.

CAB International Institute of Biological Control (CIBC), Director Dr D.J. Greathead, has its headquarters at Silwood Park, Ascot, the field station of Imperial College of Science and Technology, University of London. It has stations in Trinidad and Tobago, Switzerland, Pakistan, Kenya and Malaysia. It provides biocontrol services, conducts training, and participates in integrated pest management programmes.

Development Services (CDS), Head Mr D. Heydon, integrate the broad range of CABI expertise to provide advice and assistance with agricultural problems, but particularly those related to pest management and information services.

Library Services, Manager Mr C.J. Hamilton, have their headquarters with CIBC at Silwood Park, where the main Library is held, with additional literature collections at CMI, CIP, CDS and CABIC. Library Services operate a Document Delivery Service.

Systems

The Systems Division provides computing resources and services to all parts of CABI. It maintains a central computing facility with telecommunications access to seven remote sites, including the four CABI Institutes. CABIC is served by a modern Local Area Network which provides access to the computers, and by advanced office automation facilities. The main computers are DEC VAX systems and the principal software systems are BASIS for data management and PAGER for typesetting and information retrieval.

The staff of 20 includes database production personnel, systems analysts, programmers and computer operators. The principal systems are for the production of the CABI bibliographic database and associated functions, plus accessions control, subscription management and electronic publishing.

CAB INTERNATIONAL INFORMATION SERVICES PRODUCTS AND SERVICES

Almost 100 scientists/linguists in the 11 Bureaux of CABI's Information Services at Wallingford, UK, with help from associated organizations and individuals worldwide, abstract and index the significant research and development literature in agriculture, forestry and allied disciplines. Over 10,000 serials and many other publications are scanned, and approximately 130,000 bibliographic records are compiled each year. From this computerized database is derived a wide range of information services and products in hard copy and machine-readable form, designed to meet a variety of customer needs.

HARD COPY PRODUCTS

Abstract journals

The following abstract journals on specific disciplines, specialist crops or products, or particular livestock are published, mostly monthly or quarterly. Each has author and subject indexes, cumulated annually in a special issue of the journal.

Animal Science and Production

Animal Breeding Abstracts; Dairy Science Abstracts; Nutrition Abstracts & Reviews, Series B-Livestock Feeds & Feeding; Pig News & Information; Poultry Abstracts.

Veterinary Science and Parasitic Diseases

Helminthological Abstracts; Index Veterinarius; Protozoological Abstracts; Review of Medical & Veterinary Entomology; Review of Medical & Veterinary Mycology; Veterinary Bulletin.

Crop Science and Production

Crop Physiology Abstracts; Faba Bean Abstracts; Field Crop Abstracts; Herbage Abstracts; Horticultural Abstracts; Irrigation & Drainage Abstracts; Maize Abstracts; Ornamental Horticulture; Plant Breeding Abstracts; Plant Growth Regulator Abstracts; Postharvest News and Information; Potato Abstracts; Rice Abstracts; Seed Abstracts; Soils & Fertilizers; Sorghum & Millets Abstracts; Soyabean Abstracts; Sugar Industry Abstracts; Wheat, Barley & Triticale Abstracts.

Also published is a series of current awareness publications (CAB Prompts) on specific crops. Subject indexes are not provided. Titles in the series so far are: *Groundnuts* and *Chickpeas/Pigeonpeas*. In addition, many retrospective compilations of abstracts (Annotated Bibliographies) on various topics are available on demand.

SDI Service

SDI (Selective Dissemination of Information) is a regular current awareness service based on the most recent input to the database. Subscribers decide their own search profile and receive search results at intervals of their choice, either as computer printout or on floppy discs suitable for most microcomputers. Delivery by airmail.

CAB Alerts

This is a special SDI service providing subscribers each month with the search results from standard profiles chosen by CABI. Numerous titles are available and the list is regularly updated to reflect new subject interests. Output is available on computer printout posted by airmail.

MACHINE-READABLE PRODUCTS AND SERVICES

Online Access

The machine-readable database, known as CAB ABSTRACTS, is publicly accessible online through DIALOG Information Services (USA), BRS Information Technologies (USA), ESA-IRS (Italy), DIMDI (GFR), JICST (Japan), CAN-OLE (Canada) and Tsukuba Daigaku (Japan). The whole database back to 1973 contains over 2 million records. Search aids include the CAB ABSTRACTS Online Manual, the CAB Thesaurus (1988 Edition) and the CAB International Serials Checklist (1988).

CAB ABSTRACTS on Compact Disc

The database is also available on CD-ROM (Compact Disc Read Only Memory). Volume one contains bibliographic citations and abstracts for 1984-86; the second volume contains the 1987-89 data. CD-ROM technology provides an online search capability without the worries of cost or telecommunication problems. An IBM or fully IBM-compatible PC, 640 K RAM, MS-DOS or PC-DOS version 2.1 or higher, and a CD-ROM player are needed. The SPIRS (SilverPlatter Information Retrieval System) software allows maximum search flexibility.

Magnetic tapes

Organizations with access to mini or mainframe computers may lease all or part of CAB ABSTRACTS on magnetic tape. Update tapes are issued monthly, and retrospective tapes as required.

OTHER PRODUCTS AND SERVICES

Document Delivery Service

Photocopies of originals of most articles included in the database are available from CABI Library Services, Silwood Park, Ascot, UK. Documents may also be ordered online via DIALOG's DIALORDER or ESA/IRS's PRIMORDIAL.

Books and serial publications

CABI publishes authoritative reference books, directories and serial publications, the latter including *Bulletin of Entomological Research*, *Outlook on Agriculture*, *Index of Current Research on Pigs*, *Distribution Maps of Pests*, *Distribution Maps of Plant Diseases*, *Bibliography of Systematic Mycology*, *Descriptions of Pathogenic Fungi & Bacteria*, *Index of Fungi*, and *Systema Ascomycetum*. CABI is a co-sponsor of the International Food Information Service which publishes *Food Science & Technology Abstracts*.

Forestry

Agroforestry Abstracts; Forest Products Abstracts; Forestry Abstracts.

Crop Protection

Biocontrol News & Information; Nematological Abstracts; Review of Agricultural Entomology; Review of Plant Pathology; Weed Abstracts.

Economics, Development and Sociology

Leisure, Recreation & Tourism Abstracts; Rural Development Abstracts; World Agricultural Economics & Rural Sociology Abstracts.

Machinery and Buildings

Agricultural Engineering Abstracts.

Human Nutrition

Nutrition Abstracts & Reviews, Series A-Human & Experimental.

Biotechnology/Biodeterioration

AgBiotech News & Information; Biodeterioration Abstracts.

Notes to Readers

The address given at the end of abstract citations is that of the first author at the time of writing and is normally where the work was carried out.

Transliteration of Cyrillic script is based on the International Standard ISO/R9 1968 (E)

Journal Codes

Cross-references to other CAB journals use the following abbreviations:

<i>ABA</i>	Animal Breeding Abstracts	<i>RAE</i>	Review of Agricultural Entomology (Formerly Review of Applied Entomology Series A: Agriculture)
<i>DSA</i>	Dairy Science Abstracts	<i>RMVE</i>	Review of Medical and Veterinary Entomology (Formerly Review of Applied Entomology Series B)
<i>FCA</i>	Field Crop Abstracts	<i>RMVM</i>	Review of Medical and Veterinary Mycology
<i>FA</i>	Forestry Abstracts	<i>RPP</i>	Review of Plant Pathology
<i>HbA</i>	Herbage Abstracts	<i>SF</i>	Soils & Fertilizers
<i>HcA</i>	Horticultural Abstracts	<i>VB</i>	Veterinary Bulletin
<i>HmA</i>	Helminthological Abstracts (Formerly Helminthological Abstracts - Series A)	<i>WA</i>	Weed Abstracts
<i>IV</i>	Index Veterinarius	<i>WAERSA</i>	World Agricultural Economics & Rural Sociology Abstracts
<i>NAR</i>	Nutrition Abstracts and Reviews		
<i>NA</i>	Nematological Abstracts (Formerly Helminthological Abstracts - Series B)		
<i>PBA</i>	Plant Breeding Abstracts		

SYMBOLS FOR LANGUAGES

<i>Af</i>	Afrikaans	<i>Fi</i>	Finnish	<i>No</i>	Norwegian
<i>Ar</i>	Arabic	<i>Fr</i>	French	<i>Pl</i>	Polish
<i>Az</i>	Azerbaijan(i)/ Azerbaidzhani/ Azebaidzhanian	<i>Gr</i>	Greek	<i>Pt</i>	Portuguese
<i>Be</i>	Byelorussian	<i>Hb</i>	Hebrew	<i>Ro</i>	Romanian
<i>Bg</i>	Bulgarian	<i>Hu</i>	Hungarian	<i>Ru</i>	Russian
<i>Ch</i>	Chinese	<i>In</i>	Indonesian	<i>Sh</i>	Serbo-Croat
<i>Cs</i>	Czech	<i>It</i>	Italian	<i>Sk</i>	Slovak
<i>Da</i>	Danish	<i>Ja</i>	Japanese	<i>Sn</i>	Slovene
<i>De</i>	German	<i>Ko</i>	Korean	<i>Sv</i>	Swedish
<i>Ee</i>	Estonian	<i>Li</i>	Lithuanian	<i>Ta</i>	Tajik/Tadzhik
<i>En</i>	English	<i>Lv</i>	Latvian	<i>Tr</i>	Turkish
<i>Eo</i>	Esperanto	<i>Ma</i>	Macedonian	<i>Uk</i>	Ukrainian
<i>Es</i>	Spanish	<i>My</i>	Malay/Bahasa Malaysia		
		<i>Nl</i>	Dutch, Flemish		

Symbols with capitals represent the language of the paper: symbols without capitals the summaries.

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The CAB International Institute of Biological Control (CIBC) provides a service to organizations anywhere in the world interested in the use of biotic agents for the solution of pest problems. It has its origin in 1927 as the Farnham House laboratory of the Commonwealth Institute of Entomology, and began to develop its present structure after the Second World War, when stations were opened in strategic study areas. The headquarters is in the UK, at Silwood Park Field Station of the Imperial College of Science, Technology and Medicine, and staff are also based in Switzerland, Kenya, Malaysia, Pakistan and Trinidad.

CIBC staff undertake studies on the biology of pests and their natural enemies, select and screen suitable organisms for field trials and collect or breed them for release in the target area. If required, as well as safety screening, CIBC will undertake quarantining of agents at its laboratories in the UK which include special facilities for this purpose. Where necessary, they will assist in field release and assessment. They also participate in integrated pest management programmes intended to maximize the contribution of biological control in pest suppression.

Information on all aspects of the use of biotic agents in pest control is provided through *Biocontrol News and Information*, parasite catalogues, reviews on biological control, research papers, literature surveys for specific projects and in response to enquiries. CIBC holds training courses, and in-service training at the stations can be arranged for scientists and technicians in relevant techniques for field research and laboratory propagation of natural enemies. By arrangement with nearby Universities, CIBC will supervise studies for higher degrees carried as parts of its research programme.

In addition to its own scientific staff, CIBC is able to call on assistance from the CAB International Institute of Entomology, the CAB International Mycological Institute and the CAB International Institute of Parasitology. Its links with the Silwood Centre for Pest Management, the Institute of Horticultural Research and the Institute of Virology give access to expertise in other aspects of pest pathology, ecology and management.

Although supported by CAB International member countries, the services of CIBC are available to anyone who needs them. Advice can also be given to developing countries who wish to set up their own biological control service.

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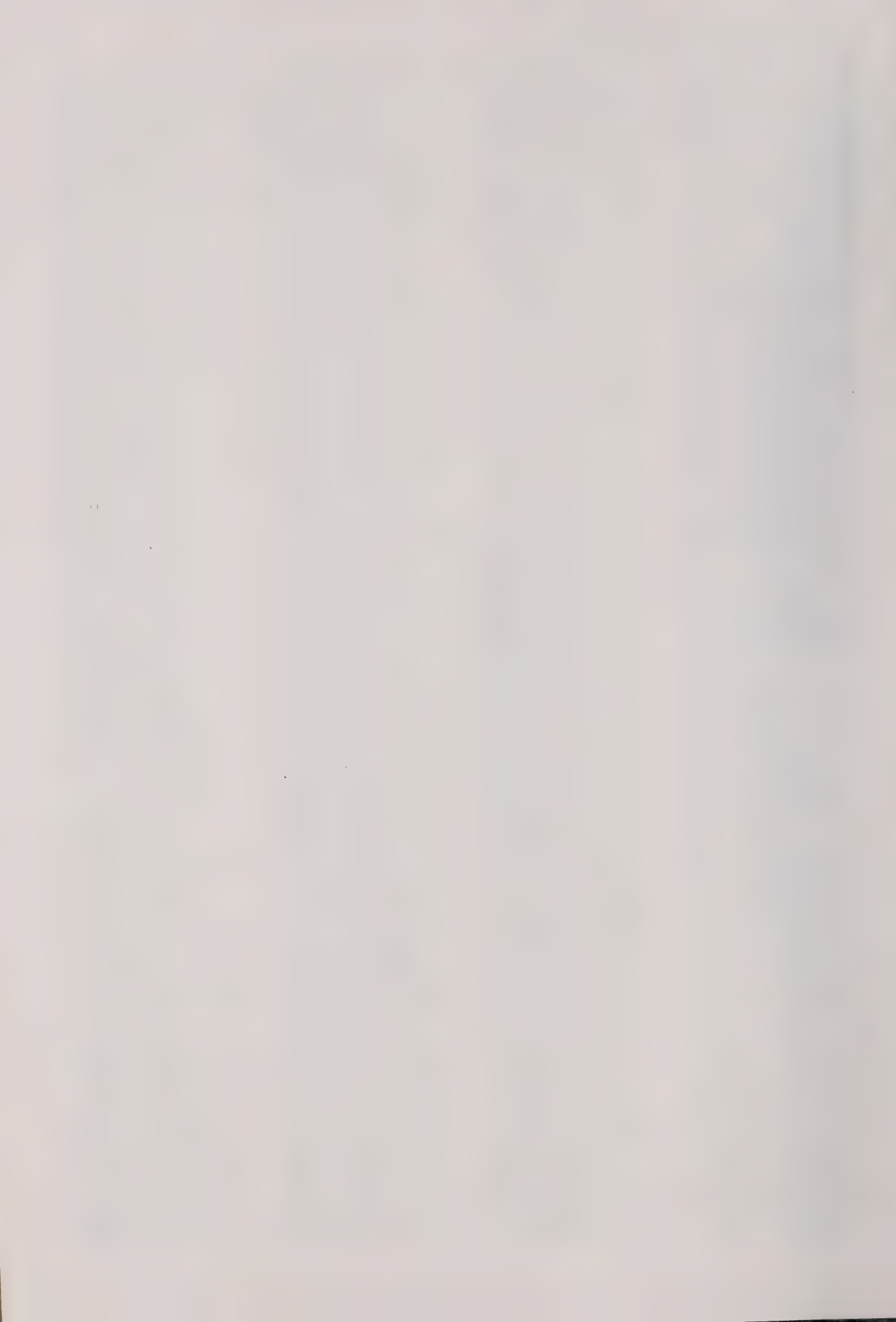
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Many other serials were scanned during 1989 but no relevant articles were selected. A full list of all the serials scanned for items suitable for abstracting for the CAB ABSTRACTS database and the whole range of CABI's abstract journals is given in the *CAB International Serials Checklist, 1988 edition*. The publication includes ISSN's and publishers' addresses. See a separate page of this Index for details.

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|---|---|
| Aardappelwereld | Applied Microbiology and Biotechnology |
| Acarologia | Aquatic Botany |
| ACS Symposium Series, American Chemical Society | Arab Journal of Plant Protection |
| Acta Agriculturae Shanghai | Archiv für Phytopathologie und Pflanzenschutz |
| Acta Agriculturae Universitatis Pekinensis | Archiv für Protistenkunde |
| Acta Agronómica, Universidad Nacional de Colombia | Archives de l'Institut Pasteur de Madagascar |
| Acta Amazonica | Archives of Insect Biochemistry and Physiology |
| Acta Ecologica Sinica | Archives of Microbiology |
| Acta Entomologica Bohemoslovaca | Arkansas Farm Research |
| Acta Entomologica Fennica | Arquivo Brasileiro de Medicina Veterinária e Zootecnia |
| Acta Entomologica Jugoslavica | Arroz |
| Acta Entomologica Sinica | Ars Veterinaria |
| Acta Faunistica Entomologica Musei Nationalis Pragae | Aspects of Applied Biology |
| Acta Horticulturae | Assiut Journal of Agricultural Sciences |
| Acta Microbiologica Sinica (Weishengwa Xuebao) | Australasian Plant Pathology |
| Acta Oecologica, Oecologia Generalis | Australian Entomological Magazine |
| Acta Phytopathologica et Entomologica Hungarica | Australian Journal of Agricultural Research |
| Acta Phytophylactica Sinica | Australian Journal of Botany |
| Acta Protozoologica | Australian Journal of Experimental Agriculture |
| Acta Průhonická | Australian Journal of Zoology |
| Acta Scientiarum Naturalium Universitatis Sunyatseni | Bangladesh Journal of Zoology |
| Acta Zoologica Bulgarica | Behavioral Ecology and Sociobiology |
| Acta Zoologica Sinica | Beiträge zur Entomologie |
| Advances in Microbial Ecology | Biochemical Systematics and Ecology |
| Agricultura Técnica | Biocontrol News and Information |
| Agricultural and Biological Chemistry | Biodeterioration Abstracts |
| Agricultural History | Biológia, Czechoslovakia |
| Agricultural Research Journal of Kerala | Biological Agriculture and Horticulture |
| Agricultural Research Review | Biological Conservation |
| Agricultural Research, USA | Biological Journal of the Linnean Society |
| Agricultural Reviews | Biological Wastes |
| Agricultural University Wageningen Papers | Biologické Práce |
| Agriculture, Ecosystems and Environment | Biologija |
| Agrociencias | Biology of Behaviour |
| Agronomia Sulriograndense | Biološki Vestnik |
| Agronomie | BioScience |
| Agronomie Tropicale | Biotechnology Letters |
| Agronomist | Biotehnologiya |
| Alon Hanotea | Biotropica |
| American Journal of Alternative Agriculture | Boletim da Sociedade Portuguesa de Entomologia |
| American Midland Naturalist | Boletín de Sanidad Vegetal, Plagas |
| American Naturalist | Boletín Técnico, Instituto Nacional de Investigaciones Forestales, México |
| American Nurseryman | Bollettino dell'Istituto di Entomologia della Università degli Studi di Bologna |
| Anais da Sociedade Entomológica do Brasil | Bollettino della Società Entomologica Italiana |
| Animal Behaviour | Bollettino del Laboratorio di Entomologia Agraria "Filippo Silvestri", Italy |
| Annalen des Naturhistorischen Museums in Wien, B (Botanik und Zoologie) | Bollettino del Museo Civico di Storia Naturale di Venezia |
| Annales de Gembloux | Bollettino dell'Istituto di Entomologia della Università degli Studi di Bologna |
| Annales de l'Institut National Agronomique El-Harrach, Algeria | Botanical Bulletin of Academia Sinica, Taiwan |
| Annales de la Recherche Forestière au Maroc | Brenesia |
| Annales de la Société Entomologique de France | British Journal of Entomology and Natural History |
| Annales Entomologici Fennici | British Reports, Translations and Theses |
| Annales Historico-Naturales Musei Nationalis Hungarici | BSES Bulletin, Bureau of Sugar Experiment Stations |
| Annales Société Royale Zoologique de Belgique | Buletin Penelitan Hortikultura |
| Annales Zoologici | Buletin Perkebunan |
| Annales Zoologici Fennici | Bulletin & Annales de la Société Royale Belge d'Entomologie |
| Annali dell'Istituto Sperimentale per la Floricoltura, Italy | Bulletin d'Ecologie |
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| Annals of Applied Biology | Bulletin of Entomological Research |
| Annals of Applied Nematology | Bulletin of Entomology |
| Annals of Biology | Bulletin of Mathematical Biology |
| Annals of the Entomological Society of America | Bulletin of the British Museum (Natural History), Entomology |
| Annals of the Phytopathological Society of Japan | Bulletin of the Entomological Society of America |
| Annals of Tropical Research | Bulletin of the Entomological Society of Canada |
| Annual Report of the Society of Plant Protection of North Japan | Bulletin of the Faculty of Agricultural Sciences, Keszthely, Hungary |
| Annual Review of Entomology | Bulletin of the Faculty of Agriculture, Saga University |
| Antenna | Bulletin of the Faculty of Agriculture, Yamaguchi University |
| Anzeiger für Schädlingskunde, Pflanzenschutz, Umweltschutz | Bulletin of the Fruit Tree Research Station, E (Akitsu), Japan |
| Applied Agricultural Research | |
| Applied and Environmental Microbiology | |
| Applied Entomology and Zoology | |

- Bulletin of the Institute of Zoology, Academia Sinica, Taiwan
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 Bulletin SROP
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 California Agriculture
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The Organization

CAB International (CABI) is an international, inter-governmental organization registered with the United Nations. It is owned and administered by its member governments; these currently number 29, but membership is open to all governments who wish to participate. Established in 1928, the organization provides information, scientific, and development services for agriculture and allied disciplines throughout the world.

Information Services

The main task of the Information Services, located at the CAB International Centre (CABIC) at Wallingford, is the creation of a bibliographic database of research on agriculture, forestry and allied disciplines, including social sciences and aspects of human medicine. Abstract journals derived from the database, and online access to it, provide a unique source of information for research scientists, development planners, educators and students. Subsidiary but growing tasks are the publication of primary journals and reference works, and training information professionals in developing countries.

The Accessions Unit acquires the relevant scientific and technical literature (ca 10,000 serials and over 5,000 other publications annually) for abstracting by almost 100 scientists/linguists in the following 11 Bureaux:

- Agricultural Economics
- Animal Breeding & Genetics
- Animal Health
- Dairy Science & Technology
- Nutrition
- Pastures & Field Crops
- Crop Protection
- Horticulture & Plantation Crops
- Plant Breeding & Genetics
- Soils
- Forestry

Further material is acquired and processed by collaborating or contracted organizations. Other staff coordinate work on specialized directories and databanks, and commission new books and primary journals. The Publications Unit is responsible for printing the journals and books, and the Marketing & Sales Division promotes and sells Information Services products and services world-wide (see inside back cover for details).

Scientific Services

CABI's Scientific Services consist of four institutes and two support services:

CAB International Institute of Entomology (CIE), Director Dr K.M. Harris, located at 56 Queen's Gate, London, and in the British Museum, Natural History.

CAB International Mycological Institute (CMI), Director Professor D.L. Hawksworth, located at Ferry Lane, Kew, London, adjacent to the Royal Botanic Gardens.

CAB International Institute of Parasitology (CIP), Director Dr R. Muller, located at Winches Farm, St Albans, the field station of the London School of Hygiene & Tropical Medicine.

These three Institutes provide an authoritative identification service for agricultural pests and other organisms, conduct research, implement projects, and provide training in their fields of expertise.

CAB International Institute of Biological Control (CIBC), Director Dr D.J. Greathead, has its headquarters at Silwood Park, Ascot, the field station of Imperial College of Science and Technology, University of London. It has stations in Trinidad and Tobago, Switzerland, Pakistan, Kenya and Malaysia. It provides biocontrol services, conducts training, and participates in integrated pest management programmes.

Development Services (CDS), Head Mr D. Heydon, integrate the broad range of CABI expertise to provide advice and assistance with agricultural problems, but particularly those related to pest management and information services.

Library Services, Manager Mr C.J. Hamilton, have their headquarters with CIBC at Silwood Park, where the main Library is held, with additional literature collections at CMI, CIP, CDS and CABIC. Library Services operate a Document Delivery Service.

Systems

The Systems Division provides computing resources and services to all parts of CABI. It maintains a central computing facility with telecommunications access to seven remote sites, including four CABI Institutes. CABIC is served by a modern Local Area Network which provides access to the computers, and by advanced office automation facilities. The main computers are DEC VAX systems and the principal software systems are BASIS for data management and information retrieval and PAGER for typesetting.

The staff of 20 includes database production personnel, systems analysts, programmers and computer operators. The principal systems are for the production of the CABI bibliographic database and associated functions, plus accessions control, subscription management and electronic publishing.

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